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CRITICISMS AND DISCUSSIONS.

MECHANISM AND THE PROBLEM OF FREEDOM.

I.

Men's opinions are far more commonly the result of the general presuppositions and prejudices of the age in which they live than the outcome of a rational process. Thus men believe whatever fits in with their general view of life and dismiss without a hearing anything which conflicts with it. In this age of science the scientist has become the arbiter of all questions, and his view is commonly accepted as authoritative. Hence problems which he refuses to examine, e. g., the question of the existence of ghosts, are at once relegated to the realm of superstition. Now there is some danger of freedom being placed among such problems. An indication of this is found in the following words of Haeckel, which represent the attitude of many contemporary scientists and psychologists toward the question of freedom: "The great struggle between the determinist and the indeterminist, between the opponent and the sustainer of the freedom of the will, has ended to-day, after more than two thousand years, completely in favor of the determinist. The human will has no more freedom than that of the higher animals, from which it differs only in degree, not in kind. . . . We now know that each act of the will is as fatally determined by the organization of the individual and as dependent on the momentary condition of his environment as every other psychic activity."¹ This view has won its way by its scientific prestige, and has been eagerly accepted by many who have never examined the evidence for freedom, but who nevertheless smile indulgently at those who are still so benighted as to believe in it. Therefore, in view of the great popularity and influence that Haeckel has enjoyed it seems profitable to examine the question of the relation of mechanism and freedom with reference to his specific teaching.

¹ *The Riddle of the Universe*, p. 130f.

There are two main principles on which Haeckel bases his system: the doctrine of evolution, and the "law of substance." The doctrine of evolution furnishes the principal evidence for his denial of a spiritual principle in man and together with the "law of substance" leads to his mechanistic determinism. We shall therefore first consider the question whether the existence of a spiritual principle is precluded by evolution or by any other arguments suggested by Haeckel. We shall then proceed to the question of the universality of the "law of substance" and to the problem of its relation to mechanism, and finally examine briefly the adequacy of mechanism itself as a philosophic explanation of the universe.

II.

Haeckel never tires of citing facts in support of the doctrine of evolution. Since this doctrine in some form or other is now almost universally accepted as true we need not stop for an instant to inquire concerning the adequacy of this evidence. The only question for us to consider is whether the doctrine of evolution inevitably leads to the reduction of mind to matter. Put very simply Haeckel's argument for this conclusion is that since man developed from the lowest forms of life there is no reason to attribute to him a separate immaterial or spiritual principle not found in the forms of life from which he originated. Many objections to this argument at once suggest themselves to the thoughtful reader. In the first place it takes for granted the old scholastic idea of rigid continuity, according to which nothing new can ever arise. Now there are grave difficulties in this view, but even waiving these for the moment, Haeckel's conclusion by no means follows. Rather, the doctrine of continuity, if strictly held, would force him to read into the life of the lowest organism all the complex processes and meanings which have been evolved in the highest forms of life. For if evolution were rigidly continuous the very fact that certain phenomena, such as sensation and will, have developed in the later stages of the evolutionary process would show that these phenomena were implicit in the earlier forms. Thus Haeckel would be compelled to understand the protozoon in the light of man, rather than to reduce man to the level of the protozoon. He indeed seems sometimes to do this, and with an extraordinary anthropomorphism bestows elementary will and elementary emotion upon even inanimate matter.² If he held consistently to this view his final system

² Cf. *infra*, p. 304.

would be in the nature of a theological hylozoism rather than a strictly mechanistic determinism. However, this reading of continuity, this attribution of man's processes to the lower forms of life, is misleading, as it involves what Baldwin calls "the fallacy of the implicit." As a matter of fact, if progress is genuine, new processes and new meanings must arise which cannot be interpreted in terms of the lower stages. Thus even though life has arisen from the inanimate, and consciousness from the unconscious, yet they involve meanings and processes which cannot be expressed in terms of the stages from which they arose. It is fallacious either to deny these new meanings and attempt to reduce them to earlier stages, or to read them back as implicit in the earlier stages. Hence the doctrine of evolution in no wise militates against the spiritual nature of man. Rather it leads us to expect man's nature to be higher or more developed than the merely physical or the merely biological.

In addition to the argument drawn from evolution, Haeckel adduces several other considerations in support of his denial of the spiritual nature of man. He brings forward the evidence of experiments which have shown that various functions of the soul, such as speech and sense images, are connected with definite areas of the cortex of the brain and disappear when these areas are diseased or destroyed.³ Again he calls our attention to the close connection between man's higher cerebral functions and purely physiological processes—a connection especially plain in the case of emotions.⁴ He also emphasizes facts concerning the individual's development which, in his opinion, indicate that the soul originates, grows, and decays with the body.⁵ Finally he points out that we never find a single instance of a spiritual principle unconnected with a physical substrate.⁶

Now although all the above arguments show clearly that there is some relation between mind and body, yet they do not succeed in reducing mind to body. The facts can be read as easily the other way. As a matter of fact, we are as conscious of the influence of mind on body as of body on mind. It is true that illness or various physical causes affect man's mental processes, but it is also true that man's mental processes affect his physical condition. In-

³ Cf. *Last Words on Evolution*, 98f; *The Riddle of the Universe*, p. 204.

⁴ Cf. *The Riddle of the Universe*, pp. 127, 204.

⁵ Cf. *The Riddle of the Universe*, Chap. VIII.

⁶ Cf. *Ibid.*, pp. 90, 91.

deed every act of will is evidence of the power of mind over matter. Now to this Haeckel might retort: "What you call will is merely a certain functioning of a physiological organism. I can even disclose to you, with my microscope, the minute structures in the brain by which willing takes place." But even if this last contention were granted it would not prove Haeckel's point. The brain with its various structures may be the instrument of mind's expression without being the *cause* of mind.⁷ Moreover the very facts of pathology which are cited by Haeckel to show the dependence of mind on matter are used by Bergson to prove that mind cannot be located in the brain nor determined by it.⁸ Furthermore in this controversy concerning the relation of mind and body, the idealist can always go back to Berkeley's position and retort, "The brain, the nervous system, etc., to which you attempt to reduce mind, are known only as ideas of mind, and cannot be proved to exist apart from mind."

A further weakness in Haeckel's arguments is that they often betray a total misunderstanding of his opponents' position. They are all directed against the existence of a separate, immaterial substance or soul. Most idealists, however, regard the soul as activity or functioning, rather than as substance. They do not insist on the separateness of the psychic principle or on the existence of any disembodied spirit, but rather on the fact that man's activity cannot be explained in purely physical or physiological terms. Suppose it be granted to Haeckel that the soul is but the "sum total of physiological functions," yet the problem of the activity of the soul is not thereby solved. Consciousness is a fundamental fact of experience, and it cannot be explained by being set aside or labeled an epiphenomenon. Therefore the materialist must explain not only how the body reacts, but how it is conscious, how it thinks, evaluates, loves, struggles, and sacrifices. It is indeed questionable whether this activity can be interpreted in purely biological or physiological terms. The so-called body becomes equivalent to the mind and demands the same sort of an explanation.

We conclude then from this discussion that Haeckel's reduction of the psychical to the physical is not valid, and we turn to an

⁷ Cf. Schiller, *Riddles of the Sphinx*, pp. 293ff; Bergson, *Matter and Memory*, pp. 299ff; James, *Human Immortality*, pp. 7-29.

⁸ Cf. Bergson, *Matter and Memory*, Chapter II.

examination of the "law of substance"—the second main support of Haeckel's system.

III.

The "law of substance" is a combination of the well-known scientific laws of the "conservation of matter" and "the conservation of energy." According to Haeckel, these laws are but two aspects of one great cosmic law, since they relate to the two inseparable attributes of substance. In passing it may be noted that little is gained by this combination of the two laws, since Haeckel's unknown substance is incapable of showing concretely the relation between matter and energy. Haeckel regards this law as the one great eternal cosmic law. On what evidence then can he base its validity?

The evidence for the law adduced by Haeckel lies in the realm of scientific experiment. Thus the law of "conservation of energy" rests on the fact that many experiments have shown that when one form of energy is changed into another, it may be reconverted into the original form of energy with only a slight loss due to the escape of part of the energy into an unavailable form. Similarly the law of the "conservation of matter" rests on experiments which have demonstrated that the weight of a substance does not change throughout a series of chemical transformations. Moreover no experiments have given any indication of the creation or destruction of matter or of energy, and the generalization of a great number of phenomena under these laws has been indeed a great achievement of science. Yet it is one thing to regard these laws as useful generalizations for the purposes of science, and quite another to erect them into ontological and absolutely universal laws. Against this latter proceeding, which is that of Haeckel, an emphatic protest must be made. There are three grounds for this protest: (1) the laws have never been proved to hold exactly in any field; (2) the fact that the laws appear to hold in one or two fields is no justification for the assertion that they must hold in all fields; (3) experience can never *prove* the absolute universality of any law.

In the first place, it is manifestly impossible to prove that the laws hold exactly in any field, since the inaccuracy of scientific instruments is such that *small* differences might pass unnoted. Furthermore there are always extraneous circumstances which must be taken into account in an appraisal of the results of an experiment. A scientific result is always an approximation, and the scientific

law states what would take place under ideal circumstances rather than what occurs in any concrete situation.

In the second place, the fact that the laws appear to hold true within certain fields of our experience does not show that they *must* hold in all fields. Thus the demonstration of the laws in the case of physical and chemical changes would furnish no proof of their applicability to the relation between the physical and the psychical. It is at this point that Haeckel's assertion of the universality of the law depends upon his reduction of the psychical to the physical. Since this is not valid, he is not entitled without more ado to extend the application of the law to the psychical realm. The application of the law here must rest upon experiments showing that a certain amount of physical energy can be transformed into a definite amount of psychical energy and reconverted into the original amount of physical energy. Manifest difficulties stand in the way of such experimentation, but until something of the sort is carried out there is little significance in speaking of the psychical life as a form of energy. To do so merely covers up the fact of our ignorance concerning the relation between the psychical and the physical. Now apparently Haeckel himself is aware of some of the difficulties in the way of regarding the psychic as a form of energy since in his last work, contrary to many of his previous assertions,⁹ he explicitly teaches that the psychic is a separate attribute of substance, coordinate with matter and energy.¹⁰ If this be admitted, however, the psychic must demand its own law of the "conservation of the psychic," if it is to come under the "law of substance." In any case, the important point for our purpose is that until the law is proved to be valid in the psychical field it furnishes no ground for a denial of freedom.

Our last objection needs no justification, as it is a philosophic commonplace that laws resting on experience can be universalized only by means of the supposition of the uniformity of nature. This uniformity, however, cannot be proved by experience without the assumption of its own existence in the attempted proof. Thus the observation that the laws apparently hold in a comparatively few instances within the narrow range of our experience is no proof that they have always held and will always hold throughout the length and breadth of the universe.

We have seen reason to question the dogmatic assertion of the

⁹ Cf. *The Riddle of the Universe*, p. 220; *Anthropogenie*, p. 941.

¹⁰ Cf. *Die Lebenswunder*, p. 185.

universality of the "law of substance." Yet if it be admitted for the sake of argument that the law is universal and necessary, it by no means follows that this law alone gives an adequate account of reality and a solution of all its riddles. The law is an abstraction; it is purely quantitative, and as such leaves out of account the qualitative aspects of the universe. Thus although the *amount* of matter and energy in the universe remain constant, changes in their form or in their combination bring about new qualities not reducible to mere quantity. Take, for example, the case of a chemist who mixes together two elements in a new combination. Their weight, as a measure of their quantity, remains the same, but this quantitative equality in no wise explains or describes the new odor, the new color, or other new properties possessed by the compound. These qualitative aspects, however, are certainly part of reality, although they cannot be described by the law of substance nor comprehended in a system which uses this law as the solution of all its problems.

The "law of substance" is for Haeckel but a necessary consequence of mechanical causation. In fact the two for him are identical.¹¹ Yet the relationship does not appear to be as simple as he would have us believe. The law of substance, he tells us, is a consequence of mechanical causation, yet his proof of the latter rests largely on his supposed proof of the universality of the former. Now the law of mechanical causation, involving the equivalence of past and present, might lead naturally, though perhaps not inevitably, to the "law of substance." On the other hand the "law of substance" does not necessarily involve mechanical causation. It does indeed preclude spontaneity, but it would be as compatible with teleology as with mechanism, since it says nothing concerning the origin of changes in matter or energy. The amount of energy and matter in the universe might remain constant if their changes were due to a desire for a future state as well as if they were due to a past stimulus. Thus even the universality of the "law of substance" would not prove the universality of mechanism. The latter theory must stand on its own feet and be accepted or rejected on its own merits.

IV.

Haeckel declares that mechanical causation explains all phenomena. To quote his own words: "The great abstract law of mechanical causality, of which our cosmological law—the law of substance—is but another and a concrete expression, now rules the

¹¹ Cf. *The Riddle of the Universe*, pp. 215, 366.

entire universe as it does the mind of man; it is the steady immovable pole-star whose clear light falls on our path through the dark labyrinth of the countless separate phenomena."¹² "The monism of the cosmos which we establish thereon proclaims the absolute dominion of 'the great eternal iron laws' throughout the universe. It thus shatters at the same time the three central dogmas of the dualistic philosophy—the personality of God, the immortality of the soul, and the freedom of the will."¹³

Before accepting Haeckel's conclusion concerning freedom the adequacy of mechanism itself must be examined. Of the many objections which might be made, and which have been made, to universal mechanism, we shall confine ourselves to the following: (1) the universality of mechanism cannot be proved; (2) the universality of mechanical causation would not, as Haeckel would have us believe, necessarily preclude purpose and rational or ethical freedom; (3) mechanism by itself fails to give a satisfactory account of experience as we actually know it.

We contend that mechanism cannot be proved. Experience cannot show that mechanical causation is universal and necessary, and reason does not disclose any logical necessity for insisting that every aspect of reality shall be explained by reference to the past. On the contrary, the concept of mechanical causation is full of difficulties which force the mind beyond it.¹⁴ The universality of mechanical causation is indeed a methodological postulate of science, but not necessarily a universal principle of reality. Haeckel makes many dogmatic assertions to the effect that mechanism is universal, and that even the will is absolutely bound by causal law. Thus the will is, he declares, the necessary outcome of heredity and environment. Yet obviously he cannot *prove* that such is the case. He cannot prove that A did a certain act because A had a certain heredity and a certain environment, and that A could not have done anything else. Indeed, in the case of human activities so many complex conditions occur that it is practically impossible to isolate any set of conditions in such a way as to establish a uniform series of cause and effect. Hence the establishment of causal connection (quite apart from the question of its universality and necessity) is in such cases a task for the future, rather than

¹² *The Riddle of the Universe*, p. 366.

¹³ *Ibid.*, p. 381.

¹⁴ For a careful analysis of causation cf. Taylor, *Metaphysics*, pp. 158ff; Ward, *Realm of Ends*, pp. 273ff; Bergson, *Time and Free Will*, pp. 199-221.

an accomplished fact. The possibility therefore remains that the mental life may resist such causal treatment. An indication in this direction is found in the comparative lack of success of psychology in the use of scientific methods found fruitful in other fields.

In the second place, even though mechanism were proved to be universal, this would by no means preclude the possibility of purpose, of value, and of rational or ethical freedom. Haeckel's absolute denial of all distinctions of value is evident in the following quotations: "As our mother earth is a mere speck in the sunbeam in the illimitable universe, so man himself is but a tiny grain of protoplasm in the perishable framework of organic nature."¹⁵ "Our own 'human nature,' which exalted itself into an image of God in its anthropistic illusion, sinks to the level of a placental mammal, which has no more value for the universe at large than the ant, the fly of a summer's day, the microscopic infusorium, or the smallest bacillus. Humanity is but a transitory phase of the evolution of an eternal substance, a particular phenomenal form of matter and energy, the true proportion of which we soon perceive when we set it on the background of infinite space and eternal time."¹⁶ From Haeckel's point of view, indeed, neither man nor the bacillus can have any value for the "universe at large," since there is, in his opinion, no purpose whatever in the universe. All is but the result of blind forces, and even the progress of evolution is of no value to the universe.¹⁷ Now this denial of value is explained by the fact that Haeckel always associates teleology with a separate immaterial principle. He regards it as an interruption of mechanical causation, and so feels that it is incompatible with monism. Whether or not an absolute monism of any sort is compatible with distinctions of value and with freedom, at least it is plain that the denial of teleology does not necessarily follow from the establishment of mechanical causation. Mechanism, as many teleologists tell us, may be the instrument of purpose. Far from being antagonistic to teleology it alone makes teleology possible. Without it purpose would be impotent. For example—to take an analogy from human life—man can utilize natural processes for the carrying out of his purposes only in so far as he can rely upon their mechanical uniformity. Even a machine is an embodiment of purpose. It works in a mechanical way, but its construction can be

¹⁵ *The Riddle of the Universe*, p. 14.

¹⁶ *The Riddle of the Universe*, p. 244.

¹⁷ Cf. *Ibid.*, Chap. XIII.

explained only in terms of purpose. From this point of view, teleology is not an external principle opposed to mechanism, but rather is immanent in all natural processes, and includes and transcends their merely mechanical aspects. The processes of the universe are describable in terms of mechanical causation, but these series of mechanical changes are what they are by reference to their value for the whole.

Again we object to mechanism taken as a sole explanation of the universe on the ground that it fails to take into account many facts of experience. Although supposed to be the direct outcome of an acceptance of evolution, mechanism has been unable to give a satisfactory explanation of evolution itself. Furthermore mechanism cannot explain the existence of values, purposes, and ideals, and many other aspects of reality.

Bergson, perhaps better than any one else, has succeeded in proving the first point. In his careful examination of theories of evolution, he shows how mechanism is forced to take refuge in a miracle to account either for the successive production and preservation of millions of minute variations in the same direction, or for the complementary changes of the various parts of an organ necessary for the preservation and improvement of its functioning. Moreover this same miracle must be repeated innumerable times as the same change has taken place in many different lines of evolution.¹⁸ Furthermore, in every explanation of evolution, terms such as adaptation and struggle for existence occur, but these are not mechanistic terms, since they imply purpose, ends, value. The mechanist holds that all achievements of evolution are merely results of external and internal forces, which are absolutely blind. Yet if such is the case, why is the organism said to struggle for existence? Haeckel himself, indeed, often finds a place for the action of internal forces and declares that the movement of molecules is due to an inner will. "Even the atom is not without a rudimentary form of sensation and will, or, as it is better expressed, of feeling and inclination—that is, a universal 'soul' of the simplest character."¹⁹ The term "inclination" suits Haeckel's purpose by its vagueness, but if it is at all comparable to will it implies a reaching for the future which is not explicable as merely the result of a previous force. To do justice to this "inclination" Haeckel would be forced beyond his rigid determinism.

¹⁸ Cf. Bergson, *Creative Evolution*, pp. 62-76.

¹⁹ *The Riddle of the Universe*, p. 225.

The discussion of the inadequacy of mechanism as an account of evolution has led directly to our second criticism: that mechanism fails to do justice to the existence of values and purposes which are present not alone in our inner experience but which find an outer embodiment in the great achievements of civilization.²⁰ Surely the painting of a great picture, the writing of a drama, or the founding of a college cannot be accounted for as the result of purely natural forces. Now the mechanist, of course, does not attempt to deny the presence and power of ideals in human life. His contention is simply that these ideals themselves are the result of purely mechanical forces. Will, Haeckel says, is absolutely determined.²¹ Thus, according to Haeckel, the psychologist can trace the behavior of the self to causes in preceding conditions much as the physicist traces causal connections between the motions of stones. Haeckel, however, overlooks the fact that at this point we happen to be in a peculiarly favored position. We *can* see the action from within as well as from without, and as we do so we discover a process of determination differing profoundly from the mode of determination described by the scientist. In our own case our action cannot be understood apart from our ideal. This ideal, although due to preceding conditions of one sort or another, does not act upon us as an external compelling force, but influences us through the appeal it makes to our own interests. It is an ideal for us because we ourselves select it, and not because it is forced upon us by any external force. But this process of the selection of an ideal, or of evaluation, is distinct from any process found in the purely physical world and is not describable in mechanistic terms.²²

Haeckel himself grows eloquent over the ideals of the good, the true, and the beautiful, and urges us to put these ideals before any false ideals promulgated by superstition. Such exhortations, however, have apparently little place in an absolutely mechanistic scheme where each self is absolutely determined by his heredity and environment. Haeckel becomes indignant over what he regards as superstitions, yet he should recall that all superstitions as well as the despised dualistic philosophy are, on his scheme, natural products and therefore as necessary as his own monistic utterances.

²⁰ Cf. Bosanquet, *The Value and Destiny of the Individual*, pp. 109ff.

²¹ Cf. *The Riddle of the Universe*, p. 131; *History of Creation*, Vol. I, p. 237.

²² For a clear description of the distinction between personal and mechanical determination, cf. Ward, *Realm of Ends*, pp. 179ff.

Furthermore the ideals of the good, the true, and the beautiful must be, for Haeckel, purely human ideals, since no values exist for the universe. But if man himself has as little value as Haeckel gives him, it is strange that he should regard human ideals as worthy of reverence and worship.

A final word must be added to our criticism of mechanism. The theory of mechanism itself is not, as Haeckel must believe, a purely natural product. It is due to the organizing activity of man's intelligence and could not exist without it. Haeckel regards this unifying and critical faculty of man as due to the "concatenation of presentations."²³ Yet the mere concatenation of presentations could never of itself lead to the criticism and combination necessary to bind together these various sensations under the law of causation. This unifying of experience demands, as Eucken has so clearly shown, that man be able to separate himself from the chain of nature in order to combine and order the presentations that come to him. Hence the formulation of the theory of mechanism is a fact which mechanism itself fails to explain, and the very existence of the *theory* is evidence of its own inadequacy as a final explanation of all facts in the universe.

Our examination of Haeckel's philosophy has shown the lack of cogency of his denial of freedom. While this in itself furnishes no evidence for the reality of freedom, it at least frees us from many objections that are commonly raised against it. It indicates that the problem cannot be disposed of in so summary a manner by science, and thus affords ground for those who in the twentieth century, in spite of Haeckel's dictum, maintain the possibility of freedom.

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DETERMINISM OF FREE WILL.

WITH REFERENCE TO THE PRECEDING ARTICLE.

There is a strange confusion about mechanicalism and freedom of will which seems to have been constructed by our theological school of educators on the basis of a misinterpretation of philosophical thought, and errors thus derived are still perpetuated.

The idea of the will is perhaps the fundamental conception of

²³ Cf. *The Riddle of the Universe*, pp. 121f.